



Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(II) Publication number:

0 167 861  
B1

(I)

## EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: 24.05.89

(51) Int. Cl.<sup>4</sup>: B 41 F 21/04, B 65 H 5/12

(21) Application number: 85107209.0

(22) Date of filing: 11.06.85

---

(54) Sheet clamp and release mechanism.

---

(30) Priority: 12.07.84 JP 105492/84 u

(71) Proprietor: VICTOR COMPANY OF JAPAN,  
LIMITED  
3-12, Moriya-cho  
Kanagawa-ku Yokohama (JP)

(43) Date of publication of application:  
15.01.86 Bulletin 86/03

(72) Inventor: Kato, Shigeru  
Yokodai Kita Danchi 1-15-402 Yokodai 2  
Isogo-ku Yokohama (JP)  
Inventor: Osada, Naomi  
Oonishi-cho 202 1382, Yoshida-cho  
Totsuka-ku Yokohama (JP)  
Inventor: Mochizuki, Masafumi  
1-5-2-104, Komachidoori  
Sagamihara-shi, Kanagawa-ken (JP)  
Inventor: Murata, Masae  
3549-27, Fukami  
Yamato-shi Kanagawa-ken (JP)

(45) Publication of the grant of the patent:  
24.05.89 Bulletin 89/21

(74) Representative: Grupe, Peter, Dipl.-Ing. et al  
Patentanwaltsbüro Tiedtke-Bühling-Kinne-  
Grupe-Pellmann-Grams-Struif Bavariaring 4  
D-8000 München 2 (DE)

(44) Designated Contracting States:  
DE FR GB

(56) References cited:

DE-B-1 019 696  
FR-A-1 381 312  
FR-A-2 124 983

IBM TECHNICAL DISCLOSURE BULLETIN, vol.  
20, no. 11B, April 1978, pages 4702-4703, New  
York, US; R.V. DAVIDGE et al.:  
"Gripper/ejector mechanism"  
Idem

EP 0 167 861 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

**Description**

The present invention relates to a sheet clamp release mechanism for use in a printer or the like, as described in the preamble of claim 1.

A conventional mechanism of this kind is shown in IBM TDB, Vol. 20, No. 118, 4/78, pages 4702/4703. In the known mechanism, presser and displacing member are radially movable with respect to each other and to the platen to form a gripper. For gripping a sheet, the displacing member stays in a radially retracked position while the presser is moved in a radially outward direction beyond the surface of the platen to grip the sheet and then to pull it radially inwards against the displacing member. For releasing the sheet, both the displacing member and the presser are first moved jointly in a radially outward direction beyond the surface of the platen and then the presser is moved further outwards to open the grip and thereby to release the sheet, the forward end of which is then lifted off by the guide means. This known case has two drawbacks. The forward end of the sheet is deformed while pulling it to a position radially lower than the platen; for releasing the sheet, presser and displacing member have to be moved relatively to each other.

It is an object for the invention to enable a smooth gripping operation of the sheet and to create an operation that does not change between sheet-clamping and sheet-releasing.

This object is achieved by the characterizing features of claim 1. In this case the sheet is pressed against the surface of the platen and thereby kept in alignment with the surface of the platen. This enables a relatively simple construction of the clamp and release mechanism, since only the presser has to be moved.

Further improvements of the invention may be gathered from the subclaims.

**BRIEF DESCRIPTION OF THE DRAWINGS**

The present invention will be described in detail by way of illustrative example with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view of a sheet clamp and release mechanism according to the present invention;

FIGS. 2 and 3 are fragmentary longitudinal cross-sectional views of the sheet clamp and release mechanism, showing the same in clamping and unclamping positions, respectively;

FIGS. 4 and 5 are fragmentary enlarged transverse cross-sectional views of the sheet clamp and release mechanism, illustrating the clamping and unclamping positions of FIGS. 2 and 3, respectively;

FIG. 6 is a cross-sectional view taken along line VI - VI of FIG. 2;

FIG. 7 is a cross-sectional view taken along line VII - VII of FIG. 2; and

FIGS. 8 through 10 are schematic side elevational views showing the manner in which a sheet of print paper is released from the platen by the sheet clamp and release mechanism.

**DETAILED DESCRIPTION**

As shown in FIGS. 1 through 3, a sheet clamp and release mechanism, generally designated by the reference numeral 6, for use in a printer, for example, according to the present invention is essentially composed of a platen 2 of the printer, a clamp 3 mounted on the platen 2, a shifter assembly 4 for shifting the clamp 3 away from the platen 2, and guide members 5 for guiding a printed sheet of paper as it is released from the clamp 3.

The platen 2 is of a cylindrical shape around which a sheet of print paper 1 (FIG. 1) can be wound. The platen 2 is supported on a shaft 7 for rotation therearound, the shaft 7 being rotatably supported by means of bearings 9 (only one shown in FIGS. 2 and 3) on a chassis 8 of the printer. The shaft 7 is operatively coupled to a suitable driving unit (not shown) such as a geared motor and can be rotated thereby at a constant speed in the direction of the arrow A (FIG. 1). A pad 10 of rubber is fixedly disposed around the peripheral surface of the platen 2 for preventing the attached sheet 1 from being displaced or slipped off position and also for giving the sheet 1 a resilient backing support for allowing a print head (not shown) to contact the sheet 1 thoroughly for producing clearer printed characters and/or images.

The clamp 3 is mounted on the outer peripheral surface of the platen 2 and extends parallel to the shaft 7, the clamp 3 being movable radially toward and away from the platen 2. The clamp 3 comprises a plurality (three in the illustrated embodiment) of displacing members 11 spaced in the axial direction of the platen 2 and movable toward and away from the platen 2, and a plurality of elongate pressers 12 joined to the displacing members 11 in line with each other in parallel relation to the shaft 7 for pressing an end 1a of the sheet 1 down against the rubber pad 10.

The displacing members 11, when displaced toward the platen 2, are fitted respectively in holders 13 mounted in the platen 2. When the displacing members 11 are moved away from and toward the platen 2, they are slidably guided by the holders 13, respectively. As illustrated in FIGS. 4 and 5, the holders 13 have respective holes 14 defined by tubular members 14a projecting radially inwardly toward the central axis of the platen 2. Levers 15 are mounted respectively on the displacing members 11 and project radially inwardly into the platen 2 toward the shaft 7 through the respective holes 14 of the holders 13. The levers 15 have flanges 15a, respectively, positioned on radially inward ends thereof. The displacing members 11 are normally urged to move radially inwardly into the platen 2 under the resilient forces of compression coil springs 16 disposed around the tubular members 14a between the flanges 15a and the bottoms of the holders 13.

Two of the pressers 12 are disposed between the three displacing members 11, and the other two pressers 12 are positioned at axial ends of the

platen 2. The pressers 12 are fixed to radially outward ends of the displacing members 11 and movable therewith radially inwardly and outwardly of the platen 2. When the displacing members 11 are moved to their radially inward position, the pressers 12 are depressed against the rubber pad 10. The displacing members 11 have substantially central slots 17, respectively, opening radially outwardly for allowing the guide members 5 to move therethrough across and past the clamp 3 without colliding with it when the clamp 3 is in its radially outward position. As shown in FIGS. 4 and 5, the displacing members 11 and the pressers 12 jointly have a gripper 18 defined therebetween where they are fixed to each other, the gripper 18 serving to grip the end 1a of the sheet 1 therein. The gripper 18 is in the form of a mouth defined between the pressers 12 and slanted surfaces 11a of the displacing members 11, the mouth being progressively opened in one circumferential direction of the platen 2 for allowing the sheet end 1a to be easily inserted into the gripper 18.

The clamp 3 is moved radially outwardly away from the platen 2 by the shifter assembly 4 when the sheet 1 is to be attached to and released from the platen 2.

As illustrated in FIGS. 2, 4 and 5, the shifter assembly 4 is generally composed of a pusher ring 19 mounted on the shaft 7 adjacent to one of the bearings 9 and spaced axially from the platen 2, and a cam mechanism 20 disposed in the platen 2. The pusher ring 19 which is substantially in the form of a hollow cylinder has a central hole 21 through which the shaft 7 extends. The pusher ring 19 is axially movable but rotatable with respect to the shaft 7. The pusher ring 19 has a pair of pins 22a, 22b projecting radially outwardly from its outer periphery in diametrically opposite relation to each other. The pins 22a, 22b are operatively coupled to levers 23a, 23b, respectively. Since the levers 23a, 23b are identical to each other in construction and operation, only the lever 23a is shown in FIGS. 6 and 7 and will be described.

In FIGS. 6 and 7, the lever 23a is pivotally supported at its intermediate portion by a pivot shaft 25 on a bracket 24 mounted on the chassis 8. The lever 23a has a substantially U-shaped recess 26 defined in one end thereof, the pin 22a being slidably fitted in the recess 26. The lever 23a also has an aperture 27 defined in an opposite end thereof and to which an arm 28 (shown by the two-dot-and-dash line) of a solenoid 28a, for example, is connected. The arm 28 is movable in the direction of the arrow B when the solenoid 28a is energized. Therefore, in response to energization of the solenoid 28a, the arm 28 turns the lever 23a clockwise (FIGS. 6 and 7) about the pivot shaft 25 to the position of FIG. 7 for moving the pusher ring 19 by means of the pin 22a axially on the shaft 7 toward the platen 2.

As shown in FIGS. 2 and 3, the cam mechanism 20 mounted in the platen 2 includes a rod 29 supported axially on the platen 2 for rotation

therewith and extending along the shaft 7, and a plurality of shifter cams 30 mounted on the rod 29 at spaced intervals equal to the intervals at which the displacing members 11 are spaced. The rod 29 is supported axially slidably on brackets 31 fixedly disposed in the platen 2 and held in radial alignment with the levers 15 of the displacing members 11. The rod 29 has one end projecting axially out of the platen 2 slidably through a hole 32 defined in an axial end of the platen 2, the end 29a being held against an annular end surface 19a of the pusher ring 19 before the pusher ring 19 is axially moved toward the platen 2. The end of the rod 29 is covered with a wear-resistant cap 29a of a slippery material held slidably against the end surface 19a of the pusher ring 19 so that the rod end can smoothly slide on the end surface 19a while the rod 29 is rotating with the platen 2.

The shifter cams 30 mounted on the rod 29 have slanted cam surfaces 30a, respectively, inclined radially inwardly in a direction away from the pusher ring 19. The radially inward ends of the levers 15 are held in sliding contact with the slanted cam surfaces 30a, respectively. A compression coil spring 33 is disposed around the rod 29 between one of the brackets 31 and one of the cams 30 for normally urging the cams 30 and hence the rod 29 to move toward the pusher ring 19. The cams 30 are attached to the rod 29 and contact the levers 15 such that when the pusher ring 19 is in the position shown in FIG. 2 prior to its movement toward the platen 2, the radially inward ends of the levers 15 are positioned on the radially innermost or bottom portions of the slanted cam surfaces 30a close to the rod 29.

The sheet clamp and release mechanism 6 of the foregoing construction will operate as follows: For attaching the sheet 1 to the platen 2 or removing the sheet 1 from the platen 2, the solenoid 28 is energized the pusher ring 19 is moved in the direction of the arrow C by the levers 23a, 23b as shown in FIG. 6 to push the end of the rod 29 as illustrated in FIG. 7. The rod 29 is axially moved in the direction of the arrow D in FIG. 2 against the resilient force of the spring 33, causing the slanted cam surfaces 30a to shift the levers 15 radially outwardly for moving the displacing members 11 radially outwardly out of the holders 13. Therefore, the clamp 3 is moved radially outwardly away from the platen 2 as shown in FIGS. 3 and 5. When the cam mechanism 20 is rotated with the platen 2, the cap 29a on the rod end slides on the annular end surface 19a of the pusher ring 19. As a consequence, the axial movement of the pusher ring 19 is smoothly transmitted to the rod 29 to shift the clamp 3 radially outwardly without fail. At the time the clamp 3 is in the radially outward position, the outer ends 11b, at the mouth opening, of the slanted surfaces 11a of the displacing members 11 which define the mouth of the gripper 18 are positioned substantially in alignment with the outer peripheral surface of the rubber pad 10, as shown in FIG. 5. When attaching the sheet 1 to the platen 2, therefore, the end 1a of

the sheet 1 can smoothly be guided along the rubber pad 10 and the slanted surfaces 11a into the gripper 18. The end 1a of the sheet 1 thus inserted in the gripper 18 is clamped by the clamp 3 when the solenoid 28 is deenergized to move back the cams 30 for allowing the levers 15 to move radially inwardly to the position shown in FIGS. 2 and 4. When removing the sheet 1 from the platen 2, the end 1a of the sheet 1 is positioned more radially outwardly than the outer peripheral surface of the rubber pad 10 since the clamp 3 has been displaced radially outwardly, as shown in FIG. 5.

As illustrated in FIG. 1, the guide members 5 are supported on an end of a plate 34 fixed to the chassis of the printer and spaced slightly radially outwardly from the platen 2 (see FIGS. 4 and 5). The guide members 5 are spaced along the platen 2 in circumferential registry with the respective slots 17, and are smaller in width than the corresponding slots 17. When the clamp 3 is in its radially outward position, the guide members 5 can pass through the slots 17, respectively, upon rotation of the platen 2 for releasing the end 1a of the sheet 1 from the platen 2. The guide members 5 have distal ends 5a located more radially inwardly than the end 1a of the sheet 1 as it is displaced radially outwardly by the clamp 3 as shown in FIG. 5.

FIGS. 8 through 10 show the manner in which the sheet 1 is released from the platen 2 while the platen 2 is in rotation.

When the sheet 1 is printed on the platen 2 while the platen 2 is being rotated, the clamp 3 is displaced radially inwardly to hold the sheet end 1a against the platen 2 as shown in FIG. 8.

For releasing the sheet 1, the solenoid 28 is energized to enable the shifter assembly 4 to move the clamp 3 radially outwardly away from the platen 2, thus displacing the sheet end 1a more radially outwardly than the distal ends 5a of the guide members 5 as indicated by the dotted line in FIG. 9. When the platen 2 is rotated in the direction of the arrow A, the guide members 5 pass respectively through the slots 17 in the clamp 3 and engage the sheet end 1a. Continued rotation of the platen 2 enables the guide members 5 to remove the sheet end 1a out of the gripper 18 and hence from the platen 2, whereupon the sheet 1 is guided slidably onto the guide members 5 and the plate 34, from which the sheet 1 will be discharged out of the printer.

Therefore, the sheet 1 can be released from the platen 2 and discharged out of the printer at a high speed and reliably without fail while the platen 2 is continuously rotated in one direction. When the sheet 1 is released from the platen 2 as shown in FIG. 10, the clamp 3 is readied for clamping a next sheet of paper on and around the platen 2. Accordingly, a succession of sheets can speedily be attached to and released from the platen 2 for printing operation at a higher rate of speed.

Although a certain preferred embodiment of the present invention has been shown and

described in detail, it should be understood that various changes and modifications may be made therein without departing from the scope of the appended claims.

5

### Claims

1. A sheet clamp and release mechanism comprising:

a rotatable cylindrical platen (2) for supporting a sheet (1) around an outer peripheral surface thereof;

a clamp (3) radially movable mounted on said platen for holding said sheet (1) when said clamp (3) is moved radially inwardly toward said platen (2);

shifter means (4, 11, 15, 30) operatively coupled to said platen for shifting said clamp radially outwardly away from said platen (2) to move an end (1a) of said sheet (1) radially outwardly away from said platen (2) when said sheet is to be released from said platen; and

guide means (5, 34) disposed adjacent to said outer peripheral surface of the platen (2) for releasing said end of the sheet (1) from said clamp (3) and platen (2) in response to rotation of said platen (2), wherein said clamp (3) comprises a plurality of displacing members (11) spaced axially along said platen (2) and movable radially toward and away from said platen (2), and a plurality of pressers (12) connected to said displacing members (11) and extending in line with each other axially along said platen (2), characterized in that said pressers (12) are arranged to extend axially of said platen (2) beyond said displacing members (11) for pressing said sheet end (1a) against said outer peripheral surface of said platen (2).

40

2. A sheet clamp and release mechanism according to claim 1, wherein said displacing members (11) and pressers (12) jointly define therebetween a gripper (18) in the form of a mouth opening in a circumferential direction of said platen for insertion therein of said end of the sheet (1), characterized in that said displacing members (11) have slanted surfaces (11a) partly defining said gripper (18) and inclined radially inwardly in said circumferential direction, said slanted surfaces having ends (11b) at an opening of said mouth which are aligned with said outer peripheral surface of the platen when said clamp is displaced radially outwardly away from said platen.

45

3. A sheet clamp and release mechanism according to claim 1 or 2, wherein said displacing members (11) have slots (17), respectively, opening radially outwardly, said guide means (5, 34) comprising a fixed plate (34) and a plurality of guide members (5) mounted on said fixed plate at spaced intervals in circumferential registry with said slots for passing respectively through said slots in response to rotation of said platen for engaging said sheet end to remove the same from said clamp (3).

50

4. A sheet clamp and release mechanism

according to claim 1 to 3, characterized in that said platen (2) supports a plurality of axially spaced holders (13) mounted on said outer peripheral surface thereof, said displacing members (11) being slidably guided by said holders, respectively, when said displacing members are moved toward and away from said platen.

5. A sheet clamp and release mechanism according to claim 1 to 4, characterized by a plurality of springs (16) acting on said displacing members (11) for normally urging said displacing members to move radially inwardly toward said platen.

6. A sheet clamp and release mechanism according to claim 1 to 5, characterized in that said displacing members (11) have respective levers (15) projecting radially inwardly into said platen (2), said shifter means comprising a plurality of shifter cams (30) disposed in said platen and movable axially therein for shifting said levers radially outwardly to displace said displacing members radially outwardly away from said platen.

7. A sheet clamp and release mechanism according to claim 6, including a shaft on which said platen is mounted for rotation thereabout, characterized in that said shifter means further includes a pusher ring (19) mounted on said shaft to be axially movable and rotatable with respect to said shaft, a rod (29) axially movably mounted on said platen and having one end (29a) held in sliding contact with an end surface (19a) of said pusher ring, said shifter cams (30) being mounted on said rod, and a solenoid (28) energizable for axially moving said pusher ring to move said rod and said shifter cams thereof for displacing said displacing members (11) radially outwardly away from said platen.

8. A sheet clamp and release mechanism according to claim 7, characterized in that said shifter means also includes a spring (33) acting between said platen and one of said cams (30) for normally urging said rod (29) to move said cams in a direction to displace said displacing members radially inwardly toward said platen.

#### Patentansprüche

1. Blatt-Klemm- und Freigabemechanismus, der umfaßt:

— eine drehbare zylindrische Schreibwalze (2), die rund um deren Außenfangsfläche ein Blatt (1) abstützt,

— eine an der Schreibwalze radial bewegbar gehaltene Klemmvorrichtung (3), die das Blatt (1) festhält, wenn die Klemmvorrichtung (3) radial einwärts zur Schreibwalze (2) hin bewegt wird,

— eine mit der Schreibwalze in Wirkverbindung stehende Verschiebeeinrichtung (4, 11, 15, 30), die die Klemmvorrichtung radial auswärts von der Schreibwalze (2) weg verschiebt, um ein Endstück (1a) des Blatts (1) radial auswärts von der Schreibwalze (2) weg zu bewegen, wenn das Blatt von der Schreibwalze freigegeben werden soll, und

— benachbart zur Außenfangsfläche der Schreibwalze (2) angeordnete Führungseinrichtungen (5, 34), um das Endstück des Blatts (1) von der Klemmvorrichtung (3) und der Schreibwalze (2) in Abhängigkeit von der Drehung der Schreibwalze (2) zu lösen, wobei die Klemmvorrichtung (3) eine Mehrzahl von axial längs der Schreibwalze (2) beabstandeten und radial zur Schreibwalze (2) hin sowie von dieser weg bewegbaren Verschiebeelementen (11) und eine Mehrzahl von mit den Verschiebeelementen (11) verbundenen sowie in einer Linie miteinander sich axial längs der Schreibwalze (2) erstreckenden Druckstücken (12) umfaßt,

15 dadurch gekennzeichnet, daß die Druckstücke (12) so angeordnet sind, daß sie sich in Achsrichtung der Schreibwalze außerhalb der Verschiebeelemente (11) erstrecken, um das Blatt-Endstück (1a) gegen die Außenfangsfläche der Schreibwalze (2) zu pressen.

20 2. Blatt-Klemm- und Freigabemechanismus nach Anspruch 1, wobei die Verschiebeelemente (11) und die Druckstücke (12) gemeinsam zwischen sich einen Greifer (18) in Form eines Mundes, der in einer Umfangsrichtung der Schreibwalze für ein Einsetzen des Endstücks des Blatts (1) offen ist, begrenzen, dadurch gekennzeichnet, daß die Verschiebeelemente (11) Schräglächen (11a) haben, die teilweise den Greifer (18) abgrenzen und in der genannten Umfangsrichtung radial einwärts geneigt sind, wobei die Schräglächen an einer Öffnung des Mundes Stirnseiten aufweisen, die mit der Außenfangsfläche der Schreibwalze fluchten, wenn die Klemmvorrichtung radial auswärts von der Schreibwalze weg verlagert ist.

25 3. Blatt-Klemm- und Freigabemechanismus nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Verschiebeelemente (11) jeweils radial auswärts offene Schlitzte (17) haben und daß die Führungseinrichtungen (5, 34) eine ortsfeste Platte (34) sowie eine Mehrzahl von an der ortsfesten Platte mit Abständen zueinander befestigte Führungsglieder (5), die in Umfangsrichtung mit den Schlitten ausgerichtet sind, um jeweils durch die Schlitte in Abhängigkeit von der Drehung der Schreibwalze für eine Anlage an dem Blatt-Endstück durchzugehen und dieses von der Klemmvorrichtung (3) zu entfernen, umfassen.

30 4. Blatt-Klemm- und Freigabemechanismus, dadurch gekennzeichnet, daß die Schreibwalze (2) eine Mehrzahl von axial beabstandeten, an deren Außenfangsfläche angebrachten Halterungen (13) lagert und die Verschiebeelemente (11) jeweils von den Halterungen verschiebbar geführt sind, wenn die Verschiebeelemente zur Schreibwalze hin sowie von dieser weg bewegt werden.

35 5. Blatt-Klemm- und Freigabemechanismus nach Anspruch 1 bis 4, gekennzeichnet durch eine Mehrzahl von auf die Verschiebeelemente (11) einwirkenden Federn (16), um normalerweise die Verschiebeelemente für eine Bewegung radial einwärts zur Schreibwalze hin zu belasten.

40 6. Blatt-Klemm- und Freigabemechanismus

nach Anspruch 1 bis 5, dadurch gekennzeichnet, daß die Verschiebeelemente (11) jeweils mit radial einwärts in die Schreibwalze (2) ragenden Schubstangen (15) versehen sind und daß die Verschiebeeinrichtungen eine Mehrzahl von in der Schreibwalze angeordneten sowie darin axial bewegbaren Schiebenocken (30) umfassen, die die Schubstangen radial auswärts verschieben, um die Verschiebeelemente radial nach außen von der Schreibwalze weg zu verlagern.

7. Blatt-Klemm- und Freigabemechanismus nach Anspruch 6 mit einer Welle, auf der die Schreibwalze für eine Drehung um die Welle gelagert ist, dadurch gekennzeichnet, daß die Verschiebeeinrichtungen des weiteren einen an der Welle gehaltenen, mit Bezug zu der Welle axial bewegbaren sowie drehbaren Schubring (19), eine an der Schreibwalze axial bewegbar befestigte Stange (29) mit einem in Gleitanlage an einer Stirnfläche (19a) des Schubringes gehaltenen Ende (29a), wobei die Schiebenocken (30) an dieser Stange befestigt sind, und einen Schaltmagnet (28), der für eine axiale Bewegung des Schubringes zu erregen ist, um die Stange und deren Schiebenocken für eine Verlagerung der Verschiebeelemente (11) radial nach außen von der Schreibwalze weg zu bewegen, umfassen.

8. Blatt-Klemm- und Freigabemechanismus nach Anspruch 7, dadurch gekennzeichnet, daß die Verschiebeeinrichtungen auch eine zwischen der Schreibwalze sowie einem der Nocken (30) wirkende Feder (33) umfassen, die normalerweise die Stange (29) für eine Bewegung der Nocken in einer Richtung, um die Verschiebeelemente radial einwärts zur Schreibwalze hin zu verlagern, belastet.

#### Revendications

1. Mécanisme de serrage et de dégagement de feuille comprenant:

un cylindre rotatif (2) pour supporter une feuille (1) autour d'une surface périphérique extérieure de celui-ci;

une pince (3) mobile radialement, montée sur ledit cylindre pour maintenir ladite feuille (1) lorsque ladite pince (3) est déplacée radialement vers l'intérieur vers ledit cylindre (2);

des moyens de décalage (4, 11, 15, 30) couplés de façon opérative audit cylindre pour déplacer ladite pince radialement vers l'extérieur dans une direction opposée audit cylindre (2) afin de déplacer une extrémité (1a) de ladite feuille (1) radialement vers l'extérieur dans une direction opposée audit cylindre (2) lorsque ladite feuille doit être dégagée audit cylindre; et

des moyens de guidage (5, 34) placés de façon adjacente à ladite surface périphérique extérieure du cylindre (2) pour dégager ladite extrémité de la feuille (1) de ladite pince (3) et audit cylindre (2) en réponse à la rotation audit cylindre (2), où ladite pince (3) comprend un ensemble d'éléments de déplacement (11) espacés axialement le long audit cylindre (2) et mobiles radialement vers et dans une direction opposée audit cylindre

(2), et un ensemble d'éléments presseurs (12) reliés auxdits éléments de déplacement (11) et s'étendant en ligne les uns avec les autres axialement le long dudit cylindre (2), caractérisé en ce que lesdits éléments presseurs (12) sont agencés pour s'étendre dans la direction axiale dudit cylindre (2) au-delà desdits éléments de déplacement (11) afin de presser ladite extrémité (1a) de la feuille contre ladite surface périphérique extérieure audit cylindre (2).

2. Mécanisme de serrage et de dégagement de feuille selon la revendication 1, dans lequel lesdits éléments de déplacement (11) et lesdits éléments presseurs (12) définissent conjointement entre eux une zone de pincement (18) sous la forme d'une bouche ouverte dans la direction circonférentielle dudit cylindre pour l'insertion au dedans de ladite extrémité de la feuille (1), caractérisé en ce que lesdits moyens de déplacement (11) ont des surfaces en pente (11a) définissant partiellement ladite zone de pincement (18) et inclinées radialement vers l'intérieur dans ladite direction circonférentielle, lesdites surfaces en pente ayant des extrémités (11b), au niveau de l'ouverture de ladite bouche, qui sont alignées avec ladite surface périphérique extérieure du cylindre lorsque ladite pince est déplacée radialement vers l'extérieur dans une direction opposée audit cylindre.

3. Mécanisme de serrage et de dégagement de feuille selon la revendication 1 ou 2, dans lequel lesdits éléments de déplacement (11) ont des fentes (17), respectivement, s'ouvrant radialement vers l'extérieur, lesdits moyens de guidage (5, 34) comprenant une plaque fixe (34) et un ensemble d'éléments de guidage (5) montés sur ladite plaque fixe à des intervalles espacés en correspondantes circonférentielles avec lesdites fentes pour passer respectivement à travers lesdites fentes en réponse à la rotation audit cylindre afin de venir au contact de ladite extrémité de la feuille et l'enlever de ladite pince (3).

4. Mécanisme de serrage et de dégagement de feuille selon la revendication 1 à 3, caractérisé en ce que ledit cylindre (2) supporte un ensemble de supports (13) espacés axialement, montés sur ladite surface périphérique extérieure de celui-ci, lesdits éléments de déplacement (11) étant guidés de façon coulissante par lesdits supports, respectivement, lorsque lesdits éléments de déplacement sont déplacés vers ledit cylindre et dans une direction opposée à celui-ci.

5. Mécanisme de serrage et de dégagement de feuille selon la revendication 1 à 4, caractérisé par un ensemble de ressorts (16) agissant sur lesdits éléments de déplacement (11) pour pousser normalement lesdits éléments de déplacement afin qu'ils se déplacent radialement vers l'intérieur vers ledit cylindre.

6. Mécanisme de serrage et de dégagement de feuille selon la revendication 1 à 5, caractérisé en ce que lesdits éléments de déplacement (11) ont des leviers respectifs (15) s'avancant radialement vers l'intérieur dans ledit cylindre (2), lesdits moyens de décalage comprenant un ensemble de

cames de décalage (30) placées dans ledit cylindre et mobiles axialement au dedans pour déplacer lesdits leviers radialement vers l'extérieur afin de décaler lesdits éléments de déplacement radialement vers l'extérieur dans une direction opposée audit cylindre.

7. Mécanisme de serrage et de dégagement de feuille selon la revendication 6, comprenant un arbre sur lequel ledit cylindre est monté pour tourner autour, caractérisé en ce que lesdits moyens de décalage comprennent en outre une bague de poussée (19) montée sur ledit arbre pour être mobile axialement et tourner par rapport audit arbre, une tige (29) mobile axialement, montée sur ledit cylindre et ayant une extrémité (29a) maintenue en contact de glissement avec une surface terminale (19a) de ladite bague de

5 poussée, lesdites cames de décalage (30) étant montées sur ladite tige, et un solénoïde (28) pouvant être excité pour déplacer axialement ladite bague de poussée afin de déplacer ladite tige et ses cames de décalage pour déplacer lesdits éléments de déplacement (11) radialement vers l'extérieur dans une direction opposée audit cylindre.

10 8. Mécanisme de serrage et de dégagement de feuille selon la revendication 7, caractérisé en ce que lesdits moyens de décalage comprennent également un ressort (33) agissant entre ledit cylindre et l'une desdites cames (30) pour pousser normalement ladite tige (29) afin qu'elle déplace lesdites cames dans un direction pour déplacer lesdits éléments de déplacement radialement vers l'intérieur vers ledit cylindre.

20

25

30

35

40

45

50

55

60

65

EP 0 167 861 B1

FIG. 1

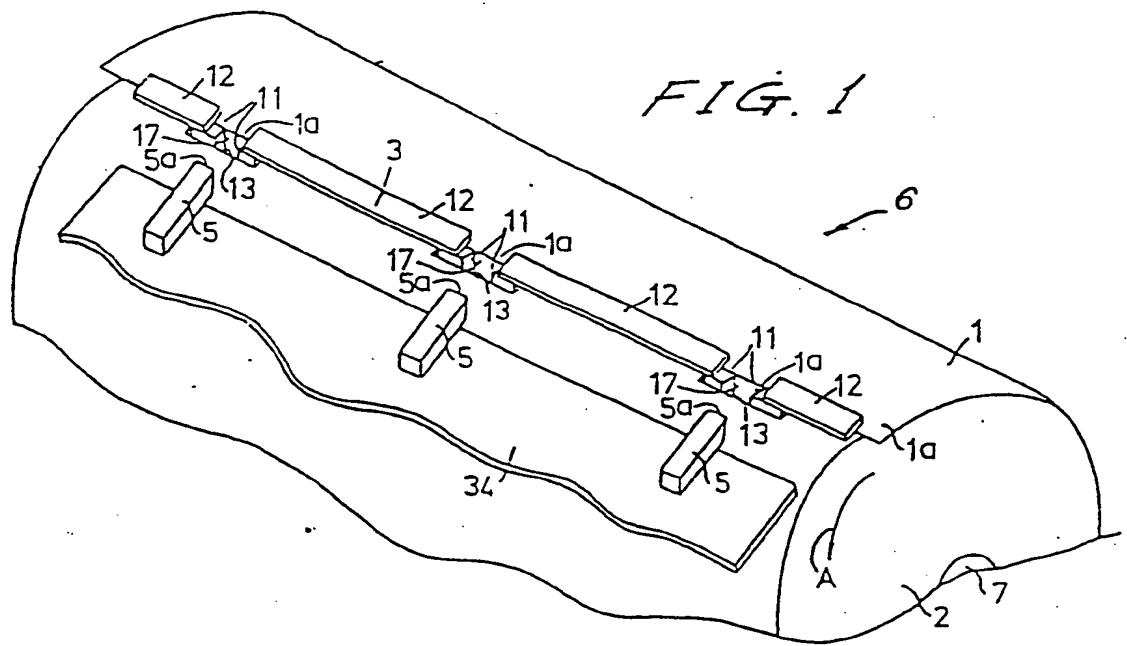


FIG. 2

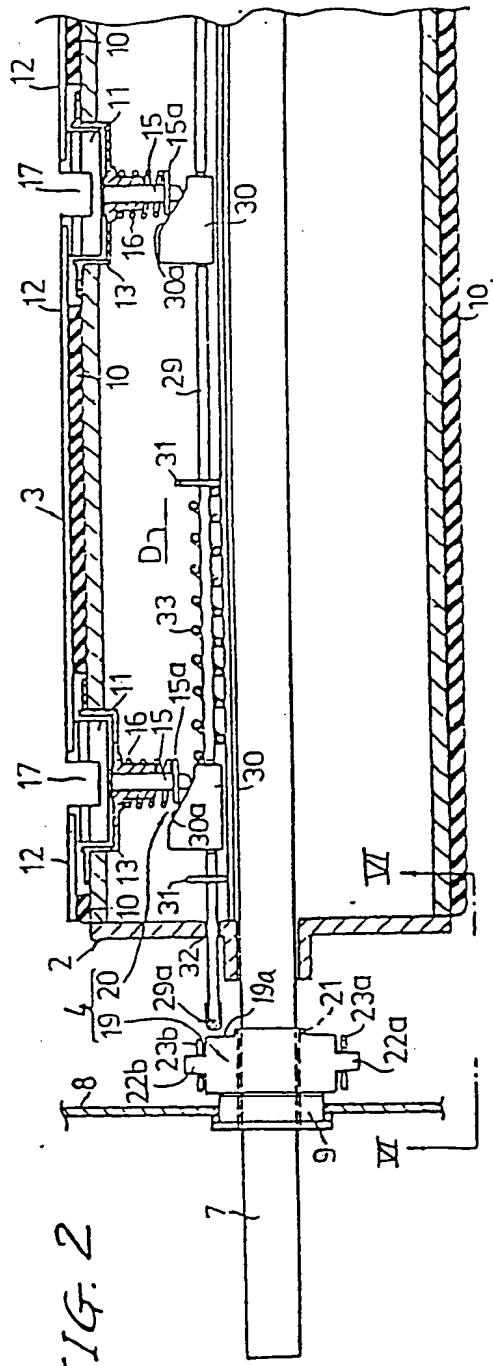


FIG. 3

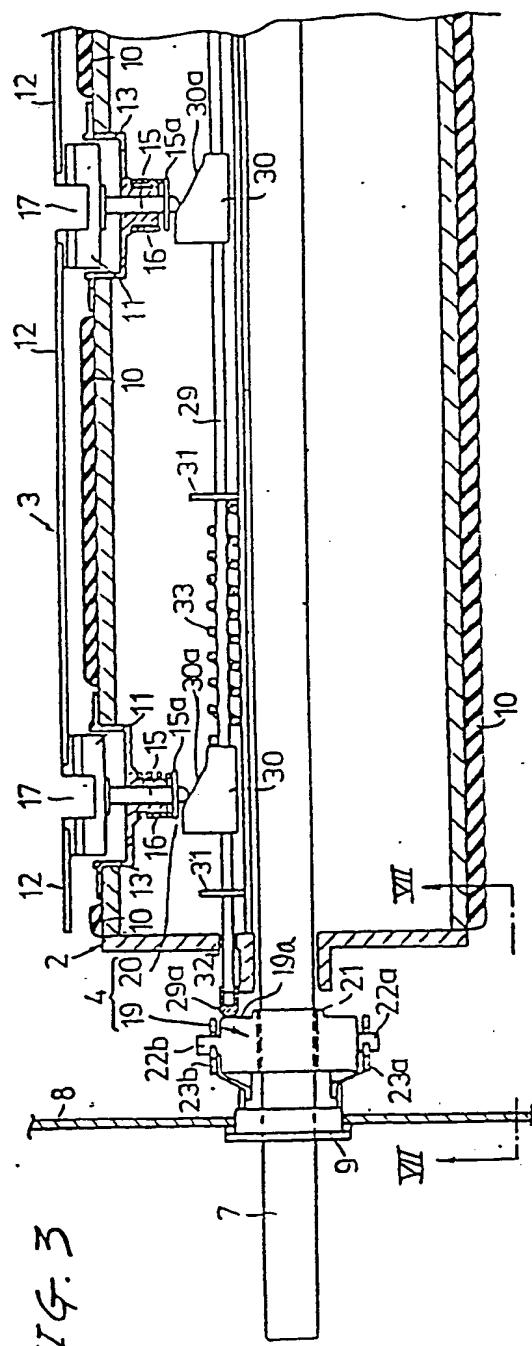


FIG. 4

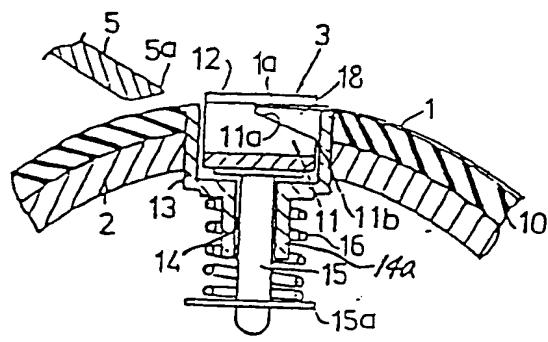


FIG. 5

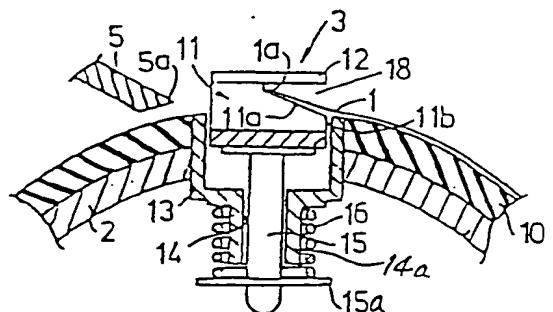


FIG. 6

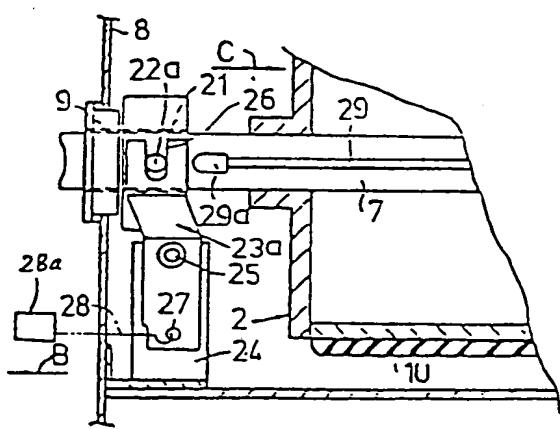
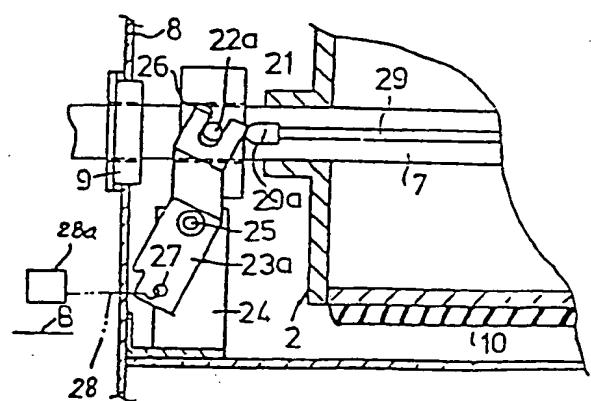


FIG. 7



EP 0 167 861 B1

FIG. 8

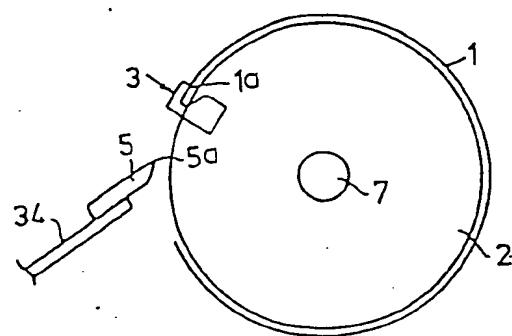


FIG. 9

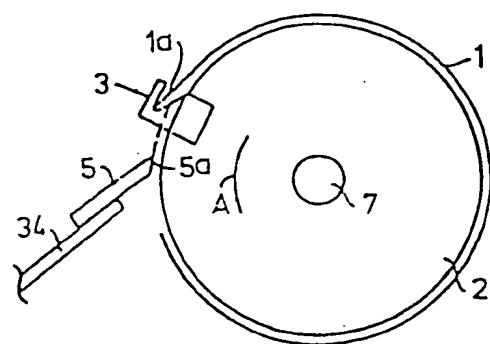


FIG. 10

